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THE

ONTARIO WATER RESOURCES

COMMISSION

WATER POLLUTION SURVEY

of the

VILLAGE OF BEETON

COUNTY OF SIMCOE

1966

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VILLAGE OF BEETON (COUNTY OF SIMCOE)
1966

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Report on a water pollution
survey of the village of Beeton,
county of Simcoe.

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REPORT

on a

WATER POLLUTION SURVEY

of the

VILLAGE OF BEETON

County of Simcoe

Prepared by

The Division of Sanitary Engineering

ONTARIO WATER RESOURCES COMMISSION

January 1966.

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R E P O R T

ONTARIO WATER RESOURCES COMMISSION

INTRODUCTION

The purpose of this survey was to assess the conditions in the Village of Beeton with reference to significant sources of water pollution. Surveys of this nature are conducted routinely and upon request throughout the Province of Ontario by the Ontario Water Resources Commission as a basis for evaluating any existing or potential sources of pollution.

Recommendations are made pertaining to water pollution abatement, and the Commission expects that corrective measures will be taken by those concerned.

When water and pollution control works appear desirable or expansions to present facilities are necessary, the Ontario Water Resources Commission (OWRC) has a programme to aid in the construction and financing of these works. The Commission also sponsors courses for plant operators, to assist them in the operation and maintenance of sewage and water works.

GENERAL

The Village of Beeton with a 1964 assessed population of 929 (1965 Municipal Directory) is located between Highways No. 9 and 89 approximately 6 miles west of Highway No. 27.

DRAINAGE

Beeton lies within the Nottawasaga River watershed. Beeton

Creek, which is a tributary of the Nottawasaga River, traverses the area near the northern boundaries of the village.

Storm sewers on Main Street and street ditches in the remainder of the village discharge to two municipal ditches, shown on the appended map, which drain naturally to Beeton Creek.

WATER USES

Municipal

Water for the village is supplied from springs which are located approximately four miles south-east of the village. The water flows from the spring catchment area via 4-inch and 6-inch diameter pipes to a 250,000 gallon capacity ground reservoir. Chlorination treatment for disinfection purposes is provided.

Deterioration of this water supply during spring runoff and shortages encountered during dry weather have necessitated some preliminary investigations to locate an alternate source.

Recreational

The Nottawasaga River and its tributaries are popular trout fishing streams.

WATER POLLUTION

Sanitary Waste Disposal

Sanitary wastes in the village are generally disposed of in individual septic tanks and sub-surface disposal fields. Septic tank systems recently constructed under the supervision of the Simcoe County Health Unit are reported to be operating satisfactorily.

Problems exist in older systems especially in the densely populated sections of the village where available area for tile fields is insufficient. Difficulties in the septic tank and subsurface method of sewage disposal are compounded by the high water table in the village.

Proposed Sewage Works

Triton Engineering Services Limited, Consulting Engineers, have submitted a preliminary engineering report for a Municipal Sewerage System for the Village of Beeton.

Final approval of this proposal is under review by this Commission.

Refuse Disposal

Refuse and garbage is collected by the municipality and disposed of in a refuse disposal site in the Township of Tecumseth. Municipal dumps in the Township of Tecumseth located at Concession XIV Lot 10, and Concession V Lot 13, have been inspected in conjunction with a previous township water pollution survey.

Industry

Industry in the village is minimal. The principal industry is Bordon Metal Products located at Dayfoot and Prospect streets. Waste from this plant is of domestic nature only.

Discussion of Sample Analyses

The results of the samples submitted for laboratory analyses are listed on the following page. The appended map indicates approximate sampling point locations.

STORM SEWER OUTLETS

<u>Date Sampled</u>	<u>Sampling Point No. & Location</u>	<u>5-Day BOD (ppm)</u>	<u>Total (ppm)</u>	<u>Solids Susp. (ppm)</u>	<u>Diss. (ppm)</u>	<u>M.F.Coliform Count per 100 ml</u>
Sept.15/65	B-1-Storm sewer outlet Centre and Cedar streets.	12	530	11	519	200,000,000
Sept.15/65	B-2-Storm sewer outlet at Main and Tecumseth sts.	82	790	50	740	610,000
Sept.15/65	B-3-Storm sewer outlet at Second Street.	96	570	45	525	10,800,000

Comments

The above results showed evidence of considerable organic and bacteriological pollution discharging via storm sewers to the open ditches which drain to Beeton Creek.

Field observations made during this survey and the laboratory analyses confirm that contaminating waste resembling sewage is being discharged to these watercourses.

Surface-Water Quality

Samples were collected from Beeton Creek upstream and downstream from the ditch outfalls. There is a routine sampling point maintained by the OWRC at the Beeton Creek at Side Road No. 10. The results of the samples collected from Beeton Creek during this survey are listed below. A record of the results of samples submitted from the routine sampling points since 1963 is also included.

The appended map indicates the approximate sampling point locations and mileage.

<u>Date Sampled</u>	<u>Sampling Point No. & Location</u>	<u>5-Day BOD (ppm)</u>	<u>Solids</u>		<u>Diss. (ppm)</u>	<u>M.F.Coliiform Count per 100 ml</u>
			<u>Total</u>	<u>Susp.</u>		
Sept.15/65	NT-60.2 - Upstream from street ditch outfalls.	2.4	254	72	236	1,700
Sept.15/65	NT59.98 - Beeton Creek downstream from street ditch outfalls.	7.0	254	18	236	1,300
July 12/61	NT60.0 - Beeton	2.8	246	-	-	270
Oct.16/61	Creek at Side	4.0	508	-	-	1,100
May 22/63	Road No. 10.	3.1	328	-	-	34,000

	<u>Turbidity Units</u>
July 12/61	7
Oct.16/61	9
May 22/63	10
Sept.16/65	4.4
	398
	52
	346
	37,000

The above results indicate intermittent impairment of the water quality of Beeton Creek at the sampling points near the ditch outfalls.

There was no discharge from these ditches to Beeton Creek on September 15, 1965. The results of the laboratory analyses of a sample collected at sampling point NT60.0 on September 16, 1965 confirmed an increase in coliform content and organic impairment. The samples were collected on September 16, 1965 after a period of heavy rainfall and the results verify that contaminating wastes were

being flushed to Beeton Creek from these drainage channels.

EXPLANATION AND SIGNIFICANCE OF LABORATORY ANALYSES

A - Bacteriological Examination

Bacteriological examinations were performed on samples from the watercourse. The Membrane Filter (MF) technique was used to obtain a direct enumeration of coliform organisms. These organisms are normal inhabitants of the intestines of man and other warm blooded animals. They are always present in sewage and are generally minimal in other pollutants. The results of the examinations are reported as MF Coliform Count per 100 ml.

The Commission's objective for surface waters in Ontario is a coliform count of not greater than 2,400 organisms per 100 ml.

B - Chemical Analysis

The chemical analysis performed on stream and outfall samples included determinations for biochemical oxygen demand, suspended solids and in some instances turbidity.

(1) Biochemical Oxygen Demand (BOD)

Biochemical Oxygen Demand is reported in parts per million (ppm) and is an indication of the amount of oxygen required for stabilization of decomposable organic matter present in sewage, polluted waters or industrial wastes. The completion of the test requires five days, under the controlled incubation temperature of 20°C.

The Commission's water quality objectives are (1) for

stream water - a 5-Day BOD of not greater than 4 ppm. (II) for storm sewer, sewage treatment plant and industrial waste discharges - a 5-Day BOD of not greater than 15 ppm.

(2) Solids

The laboratory does tests to determine the total and suspended solids in a sample. The value for dissolved solids is determined by taking the mathematical difference between the total and suspended solids.

The concentration of suspended solids expressed in parts per million (ppm) is generally the most significant of the solids analyses in regard to stream water and outfall discharge qualities.

The OWRC's objective for discharge is a suspended solids concentration of not greater than 15 ppm.

(3) Turbidity

Turbidity is caused by the presence of suspended matter such as clay, silt, finely divided organic matter, plankton and other microscopic organisms in water or outfall discharges. It is an expression of the optical property of a sample and the results are reported in "Silica Units".

SUMMARY AND CONCLUSIONS

This survey confirms that sanitary wastes are being discharged to municipal storm sewers. Effluent from the storm sewer is directed to drainage ditches which discharge to Beeton Creek.

Localized problems of insufficient lot size and a high water table prohibits the installation of satisfactory private sewage disposal systems.

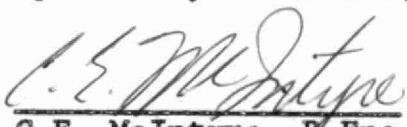
It is concluded that the installation of a municipal sewage collection system and adequate treatment facilities are urgently needed to serve the Village of Beeton.

RECOMMENDATION

It is recommended that the Corporation of the Village of Beeton proceed with negotiations which will enable a prompt final approval and subsequent construction of the proposed municipal sewerage system.

All of which is respectfully submitted,

District Engineer


C.E. McIntyre, P.Eng.,

Approved by

J.R. Barr, Director,
Div. of Sanitary Engineering.

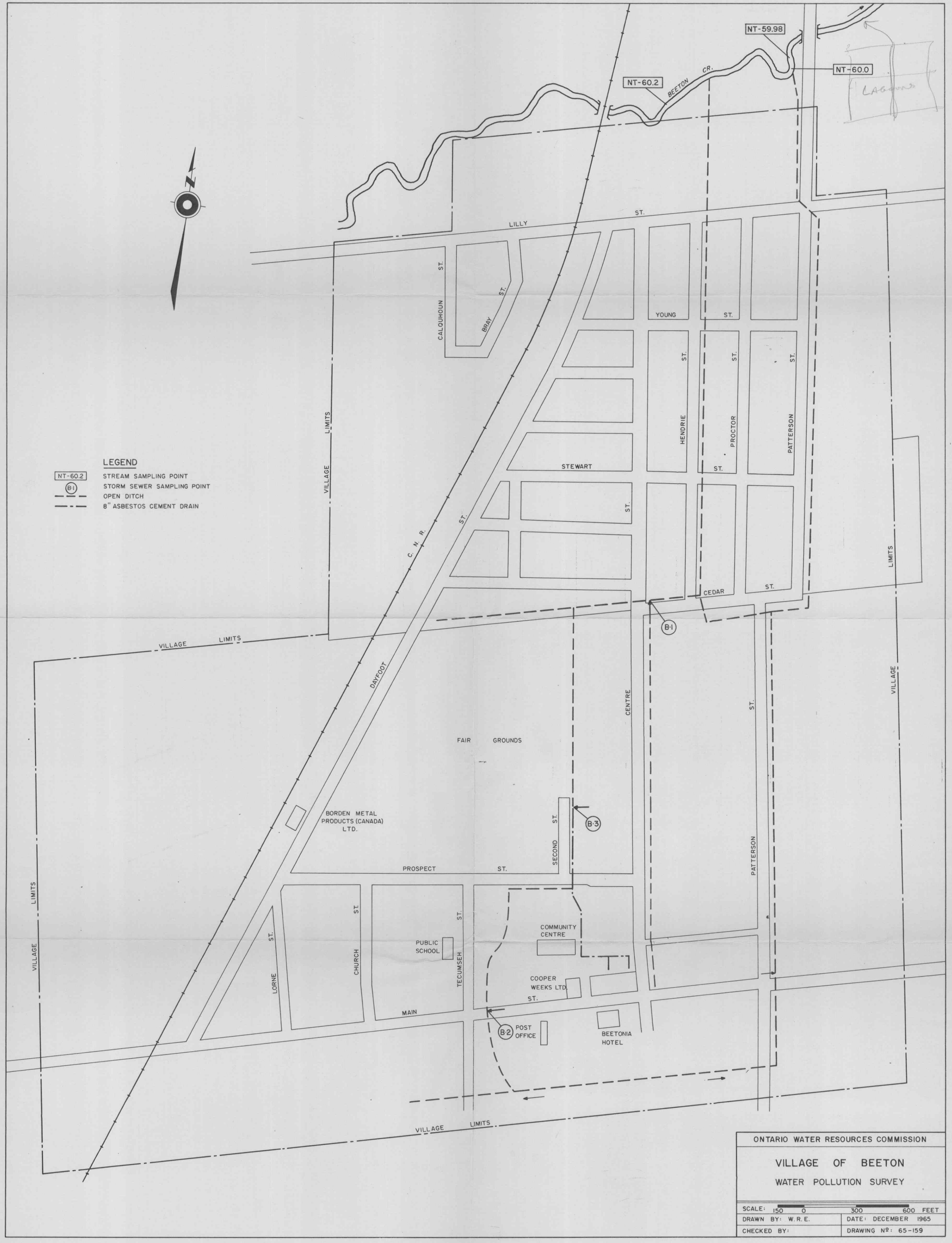
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Prepared by: D.J. Currie,
Engineer's Assistant.



LEGEND

- NT-60.2 STREAM SAMPLING POINT
- (B-1) STORM SEWER SAMPLING POINT
- OPEN DITCH
- - - 8" ASBESTOS CEMENT DRAIN



ONTARIO WATER RESOURCES COMMISSION	
VILLAGE OF BEETON	
WATER POLLUTION SURVEY	
SCALE: 150 0 300 600 FEET	
DRAWN BY: W.R.E.	DATE: DECEMBER 1965
CHECKED BY:	DRAWING NO: 65-159